C1 concl

e) identifying the current frame as a key frame if the chromatic difference measure exceeds a chromatic threshold and the structure difference measure exceeds a structure threshold, otherwise selecting a new current frame; and

f) repeating c), d), and e) until a key frame is identified.

C2 concl

3. (Twice amended) The method defined in Claim [1] 2, additionally comprising repeating [c)-e)] b)-f) for a new current frame until another key frame is identified or the end of the video is reached.

C3 concl

4. (Amended) The method defined in Claim [3] 1, wherein the new current frame is selected to be at a predetermined time interval after the current frame.

8. (Thrice Amended) A computerized method of [extracting] identifying a key frame from a video having a plurality of frames, the method comprising:

a) providing a reference frame;

b) providing a current frame different from the reference frame;

C4 concl

c) determining a first difference measure between the reference frame and the current frame;

d) determining a second difference measure between the reference frame and the current frame based, at least in part, on edges identified in each of the frames; [and]

e) identifying the current frame as a key frame if the first difference measure exceeds a first threshold and the second difference measure exceeds a second threshold, otherwise selecting a new current frame; and

f) repeating c), d), and e) until a key frame is identified.

C5 concl

11. (Twice Amended) The method defined in Claim [8] 9, additionally comprising repeating [c)-e)] b)-f) for a new current frame until another key frame is identified or the end of the video is reached.

C6 canx

17. (Twice Amended) The method defined in Claim 8, additionally comprising determining a third difference measure between the reference frame and the current frame, and

C6 Cancel

wherein the identifying identifies the current frame as the key frame if the third difference measure exceeds a third threshold, otherwise selecting a new current frame.

18. (Thrice Amended) A computerized method of [extracting] identifying a key frame from a video having a plurality of frames, the method comprising:

C7 Cancel

a) providing a reference frame;

b) providing a current frame different from the reference frame;

c) determining a structure difference measure between the reference frame and the current frame based, at least in part, on edges identified in each of the frames; [and]

d) identifying the current frame as a key frame if the structure difference measure exceeds a structure threshold, otherwise selecting a new current frame;

e) repeating c) and d) until a key frame is identified.

C8 Cancel

20. (Twice Amended) The method defined in Claim [18] 19, additionally comprising repeating [c) and d)] b)-e) for a new current frame until another key frame is identified or the end of the video is reached.

23. (Amended) A computerized method of [extracting] identifying a key frame from a video having a sequence of frames, the method comprising:

C9 Cancel

a) providing a reference frame;

b) providing a current frame different from the reference frame;

c) determining a chromatic difference measure between the reference frame and the current frame;

d) determining a structure difference measure between the reference frame and the current frame; [and]

e) identifying the current frame as a key frame if the chromatic difference measure exceeds a chromatic threshold and the structure difference measure exceeds a structure threshold, [without accumulating differences between pairs of frames of the video sequence] otherwise selecting a new current frame; and

f) repeating c), d), and e) until a key frame is identified.

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Please add new Claim 24 as follows:

24. A computerized method of identifying a key frame from a video, comprising:

a) providing a reference frame;

b) providing a current frame different from the reference frame;

c) determining a chromatic difference measure between the reference frame and the current frame;

d) determining if the chromatic difference measure exceeds a chromatic threshold;

e) identifying the current frame as a key frame candidate, otherwise selecting a new current frame and skipping f) and g);

f) determining a structure difference measure between the reference frame and the key frame candidate based, at least in part, on edges identified in each of the frames;

g) identifying the key frame candidate as a key frame if the structure difference measure exceeds a structure threshold, otherwise selecting a new current frame; and

h) repeating c) through g) until a key frame is identified.

REMARKS

Applicant adds new Claim 24 and amends Claims 1, 3, 4, 8, 11, 17, 18, 20 and 23 by this paper. Claims 2, 5-7, 9-10, 12-16, 19, and 21-22 remain unchanged and are also presented for examination. Reconsideration and allowance of all Claims 1-24 in light of the present remarks is respectfully requested.

Discussion of the Question Regarding a Journal Article

The Examiner asked why the article "Production Model Based Digital Video Segmentation" as it appears in the *Multimedia Tools and Applications*, 1995, by Arun Hampapur, Ramesh Jain and Terry Weymouth, as referenced in Zabih et al., U.S. Patent No. 5,767,922, was not disclosed in an Information Disclosure Statement. The article seems to be cumulative to Chapter 5 of the Hampapur Dissertation, University of Michigan, 1995, of which Jain and Weymouth were the co-chairs of the doctoral committee. However, Applicant's representative will be submitting the article in a Supplemental Information Disclosure Statement.